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Reconnaissance Report

for

Humboldt National Forest
Ruby Mountains Ranger District

Cold Lakes
Potential Research Natural Area

Report prepared tor:

Intermountain Research Station
USDA, Forest Service
324 25th Street
Ogden, Utah 84401

Report prepared by:

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The Nature Conservancy
Nevada Public Lands Program
133 N. Sierra Street, Suite 204
Reno, Nevada 89501

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Reconnaissance Report
Summary Page

Area Name: Cold Lakes

National Forest: Humboldt *Ranger District*: Ruby Mountains

Quadrangles: Lamoille, 15 minute series

General Location: About 15 km (9.5 mi) east of Lamoille in the Ruby Mountains, southwestern Elko County, Nevada.

Size: 850 acres *Physiographic Region*: Great Basin

Major Cells Present:

Subalpine forest and treelimit: *Pinus flexilis* and *Pinus albicaulis* (?);
Subalpine shrublands: *Artemisia tridentata* ssp. *vaseyana-Festuca idahoensis-Bromus carinatus, Potentilla fruticosa* and *Ribes montigenum*; *Salix glauca* (?)-*Carex* sp.;
Alpine steppe: *Festuca brachyphylla, Poa fendleriana,* and *Carex elynoides*;
Alpine meadow: *Potentilla diversifolia-Carex* sp.;
Alpine shrubland: *Artemisia arbuscula-Leucopoa kingii*;
Alpine talus and scree: *Silene acaulis, Phlox pulvinata*, and others.

Additional Features:

Alpine glacial features, such as tarns, cirques, U-shaped valleys, and ridgelines. Habitat for *Primula capillaris* and *Astragalus robbinsii* var. *occidentalis*, two federal category 2 candidates.

Recommendation:

The Cold Lakes area would make an excellent contribution to the RNA system because it holds exemplary subalpine and alpine targets in good to excellent condition. I recommend that the INT/R4 RNA Committee formally nominate the Cold Lakes candidate RNA to the Regional Forester, and plan for the completion of an Establishment Record. I further recommend that this reconnaissance report be made available to the Humboldt National Forest to help complete the required environmental assessment.

Prepared by: Jan Nachlinger

Date: 5 June 1991

Cold Lakes
Ruby Mountains District
Humboldt National Forest

Introduction

The *Regional Guide for the Intermountain Region* states that Research Natural Areas (RNAs) are to be established as part of the national system of RNAs to promote and protect biological diversity (U.S. Department of Agriculture, 1984). The national RNA system will eventually include representative and unique examples of forest, shrubland, grassland, alpine, aquatic, and geologic targets that have special characteristics of scientific interest and importance. A workshop held in 1982 and directed at identifying RNA needs in Nevada and Utah indicated that the Great Basin Province was lacking representation of alpine lands and associated geomorphic features (Van Pelt, 1982). The Ruby Mountains were identified in the workshop's resulting document as one of several areas of known importance for its alpine ecosystems and rare plants. Cold Lakes was specifically identified as important for alpine glaciation and associated geologic features such as moraines, cirques, and alpine tarns.

The purpose of this reconnaissance-level survey was to evaluate the quality of the Cold Lakes area as a potential RNA to represent subalpine and alpine terrestrial communities. Presence of the target communities in sound condition was the essential consideration, but other basic qualifying criteria, such as minimum size (> 300 ac) and relative lack of human-caused disturbances, were evaluated. The quality of the plant communities around the Cold Lakes area was considered in light of other known alpine areas to determine whether this area was the best choice for representation of the target cells of interest. The most suitable boundary for an RNA was appraised on site primarily by taking ecological needs into consideration, however, management concerns were also kept in mind.

The Ruby Mountains Ranger District Office was visited on 16 July 1990 to meet with staff and discuss land status, uses, and current management of the Cold Lakes area (Mitch Bulthuis, personal communication). When potential problems with a RNA designation for the area surfaced, possible solutions were discussed. The field reconnaissance survey of the Cold Lakes area was conducted on 18 and 19 July by myself.

General Description

The Ruby Mountains, with their extensive glaciated alpine topography, are one of the most spectacular ranges in the Great Basin (McLane, 1978). They lie within the Great Basin section of the Basin and Range physiographic province (Fenneman, 1931). The high

point of the chain is Ruby Dome at 3,471 m (11,387 ft) in elevation and located south of Lamoille Canyon. Cold Lakes are located about 18 km (11.2 mi) northeast of Ruby Dome in the northern part of the range.

The Ruby Mountains are a typical Great Basin fault-blocked mountain range trending north northeast-south southwest with an clear westward tilt (Sharp, 1939 and 1940). The core of the range is composed of metamorphic and igneous rocks. Overlying this core are brittly-deformed sedimentary and volcanic rocks of Paleozoic and Tertiary age. In the Cold Lakes region, unfossiliferous marbles, dolomites, and quartzites predominate (Howard *et al.*, 1979). The Rubies were the most heavily glaciated range in the state during the Pleistocene. The deep recesses, cirque basins, cliffs, sharp ridges, glacial lakes, and U-shaped valleys present today are evidence of this past glaciation.

The vegetation of the Cold Lakes area is comprised of subalpine treelimit and shrubland communities, and alpine shrubland, grassland, and forbland communities. The area is floristically classified within the Central Great Basin section of the Great Basin division of the Intermountain region (Cronquist *et al.*, 1972). This section is floristically unique in that the flora has evolved in place since major plant migrations occurred from the Rocky Mountains and Western Cordilleran source areas (Reveal, 1978). The Ruby Mountains are considered to have the most species rich alpine flora of all Great Basin ranges (Loope, 1969).

Location and Access

The Cold Lakes area lies in Elko County in the northern part of the Ruby Mountains about 15 km (9.5 mi) east of Lamoille located in Lamoille Valley (Maps 1 and 2). The subalpine-alpine area also lies about 11 km (7 mi) northeast of the Thomas Creek campground located in Lamoille Canyon. The legal description of its location is Township 33 North, Range 59 East, sections 27 and 34, Mount Diablo Meridian. Cold Lakes are at latitude 40° 42' 50" North, longitude 115° 18' 5" West. Useful maps for the area include U.S. Forest Service Ruby Mountains Ranger District (1/2 in/mi scale) and U.S. Geological Survey 15 minute series Lamoille.

Except for high routes south out of the head of Lamoille Canyon, access to the higher elevations of the Ruby Mountains is somewhat difficult because of the checkerboard nature of land ownership along the northwestern flanks of the range. The Forest Service has agreements with several private land owners to provide access to the National Forest lands and visitors can get access through locked gates once contacts have been made with these land owners. Access to the Cold Lakes area is made from the west on two-wheel-drive roads and Forest trails.

To approach the area, drive southeast from Elko on the Lamoille Highway (State

Route 227) about 32 km (20 mi) to Lamoille. Continue along this road zigzagging northeast up Lamoille Valley about 11 km (7 mi) to Forest Route 336. A private pasture gate blocks access up the road just past the microwave tower. Permission to pass and the gate key must be obtained from the private landowner, Ken Jones, to continue another 5 km (3 mi) to the trailhead. Hike along Forest Trail 106 up the Middle Fork of Cold Creek about 10 km (6 mi) to the lakes basin. A steep, but short, cross-country route up this cirque basin accesses the backbone of the Ruby Mountains.

Land Status

The Cold Lakes area lies completely within lands administered by the Ruby Mountains Ranger District of the Humboldt National Forest. It lies just within the boundary of the 90,000 ac Ruby Mountains Wilderness Area designated by Congress on 5 December 1989. There are no cabins, administrative sites, utility corridors, roads, or communication sites in the immediate Cold Lakes area. Forest Trail 106 is in the area up to the lakes. Private lands do not occur in the immediate area. The *Humboldt National Forest Land and Resource Management Plan* calls for land exchanges, acquisitions, and right-of-ways to provide public access and block up land for more efficient management for the lands west of the Cold Lakes area (U.S. Department of Agriculture, 1986).

Mining claims within the Cold Lakes area were not researched for this report nor was the status of oil and gas leasing. The area has little potential for energy and mineral development and no operating plans currently exist. No conflicts with mineral and energy interests are foreseen.

There is one grazing allotment west of the crest in the Cold Lakes area. The allotment is permitted for sheep, but cattle currently graze. The district plans to revise the management plan for this allotment and reduce the number of permitted head. The lower canyon is heavily grazed where slopes are gentle and forage production is good. However, little evidence of grazing was observed on the steeper upper slopes during the field visit. Forage production is relatively low in the subalpine and alpine areas, and slopes are very steep. In conclusion, no conflict from grazing interests are anticipated.

Recreational use in the Cold Lakes area is low and primarily restricted to hiking, hunting, and associated wilderness activities. Even with wilderness designation, trail use on the access route was fairly light, possibly because of the remoteness of the area and the difficulty of access. Trout occur in Cold Lakes and they provide recreational fishing occasionally. A couple of camps are located at the lakes. Little evidence of human use was seen along the alpine ridgeline. Deer are abundant in the Rubies. Packers occasionally guide in hunting parties, but their livestock remain at lower elevations and gentler slopes. Management of the area for its wilderness values is compatible with RNA status, and no conflicts with recreational activities or wildlife values are expected.

Primary Features

The Cold Lakes area harbors several subalpine and alpine plant communities in good to excellent condition. The following descriptions are cursory because they are based on one short field visit and meager plant collecting for purposes of identifying the dominants. Lewis (1971) was helpful to check plant determinations.

The upper subalpine areas are delimited by small stands of *Pinus flexilis* and possibly *P. albicaulis* (Loope, 1969; Eyre, 1980). Understory among the pines is diverse and includes *Polygonum phytolaccaefolium, Potentilla diversifolia, Mertensia oblongifolia, Salix glauca,* and *Ribes montigenum.* Individual pine trees become stunted, flagged, and recumbent at treelimit. These areas were in good condition (Photos 1 and 2).

The lowest open subalpine slopes below the lakes have a mountain big sagebrush shrubland community, *Artemisia tridentata* ssp. *vaseyana-Festuca idahoensis-Bromus carinatus*, intermixed with forest stands (Mooney, 1985; Jensen *et al.*, 1988a and 1988b). Common associated species in this community include *Symphoricarpos oreophilus, Mertensia oblongifolia,* and *Balsamorhiza sagittata.*

On rocky sites near the lakes, another subalpine shrubland community is dominated by *Potentilla fruticosa* or *Ribes montigenum* and with various sedges present (Photo 1). Areas that receive more moisture, such as along the inlet stream and below snowbanks have a subalpine willow shrubland, *Salix glauca* (?)-*Carex* sp. *Ligusticum grayi* is common and *Pedicularis groenlandica* is a conspicuous component in this community (Photos 2 and 3).

Alpine plant communities include dry steppe, moist meadow (fell-field), shrubland, and talus and scree (alpine barren) types. These communities form a mozaic of alpine vegetation types along the ridgeline as a result of varying substrate and topographic situations, which exert control over the amounts of moisture, rockiness, and exposure to wind (Billings, 1978 and 1988; Loope, 1969). General photographs of the alpine ecosystems are in Photos 1, 2, and 3. These communities were in excellent condition with essentially no evidence of human-caused disturbances.

In protected to exposed topographic positions where soil moisture is relatively less, an alpine dry steppe community is present. The community dominants are graminoids including *Festuca brachyphylla, Poa fendleriana,* and *Carex elynoides.* (Billings, 1978 and 1988). Associated species include *Smelowskia calycina, Antennaria rosea,* and *Penstemon procerus.* The community is very open with a rocky soil surface (Photo 4).

On protected to exposed sites where soil moisture is relatively greater, for example, near late-lying snowbanks, an alpine moist meadow community is present. Dense patches of *Potentilla diversifolia* occur here with various grasses and sedges. Associated species include *Artemisia ludoviciana, Saxifraga* sp. and *Trisetum spicatum* (Photo 4).

On very gently sloping areas near the ridgeline is a shrubland community dominated by *Artemisia arbuscula-Leucopoa kingii*. Several herbaceous perennials are present among the shrubs and bunchgrasses. Soil surface is rocky, but plant cover is relatively high (Photo 5).

On the most exposed, driest, and rockiest slopes is an alpine talus and scree community. In this barren community, bedrock and rock fragments may account for up to 99 percent of the cover, while total plant cover is minimal. Characteristic alpine species occur here: *Silene acaulis, Cymopterus humboldtensis, Geum rossii, Draba densifolia,* and *Phlox pulvinata* (Photo 6).

No federally listed or candidate species for threatened or endangered status is known to occur within the Cold Lakes area (Nevada Natural Heritage Program, personal communication). However, two category 2 plant candidates, *Astragalus robbinsii* var. *occidentalis* and *Primula capillaris*, occur nearby. Suitable habitats for these rare species were encountered during the survey, although the species were not seen.

Size and Boundary

A recommended ecological boundary for the proposed Cold Lakes Research Natural Area is given in Map 2. The boundary follows contour lines which define the upper subalpine and alpine communities in the immediate Cold Lakes area. The boundary follows the sharp ridgeline defining the Cold Lakes cirque in the northern part, but drops in elevation to include the alpine plateau in the southern part. The area encompasses the headwaters of the Middle Fork and South Fork of Cold creeks. Any subsequent legal boundary used to more conveniently describe and manage the area should encompass the entire recommended ecological boundary.

The size of the recommended area is approximately 345 ha (850 ac). This is a moderately small area for an RNA, especially for alpine lands. Adjacent alpine lands could be incorporated into the boundary if there was an interest in a larger area.

Suitability for Research Natural Area Candidacy

The Cold Lakes area would make a choice RNA for subalpine and alpine target communities. The Cold Lakes cirque basin and neighboring alpine plateau and ridgeline

harbor several alpine plant communities in excellent condition which are in need of receiving representation in the RNA network. The unique setting of the Ruby Mountains with its extensive glaciated features has resulted in plant communities that are floristically different from other Great Basin alpine communities already represented in the network, for example, the Mount Jefferson RNA in the Toquima Range of central Nevada.

The area meets the minimum size requirement and is in good to excellent condition with essentially no evidence of human-caused disturbances at the higher elevations. The alpine area is remote, but not excessively laborious to access. It would be ideal for alpine research activities in a floristically diverse setting with near-pristine conditions.

There appear to be no conflicts with other uses in the area. Recreational use is very light. Mineral potential and forage production are low. Commercial timber is non-existent. RNA designation would be compatible with wildlife and wilderness management objectives. Finally, district-level staff were essentially supportive of the special designation and voiced no substantive management concerns.

Recommendations

The Cold Lakes area is well-qualified for the RNA designation. Consequently, I recommend that the Intermountain Station/Region 4 RNA Committee formally nominate the Cold Lakes candidate Research Natural Area to the Regional Forester.

In addition, the INT/R4 RNA Committee should plan for the timely completion of an establishment record for the candidate RNA. Field work done for the establishment record should be an in-depth survey to more fully describe and classify the plant communities present. This field work should also determine if any federally listed or candidate species for threatened or endangered status occur within the Cold Lakes area. A larger area is probably worth investigating more fully since the Cold Lakes area is of such high caliber.

Finally, I recommend that this reconnaissance report be made available to the Ruby Mountains Ranger District so that they may use its contents to complete an environmental assessment of the RNA designation action. This is a necessary step to comply with the National Environmental Policy Act and timely action now will prevent delays in the establishment process later.

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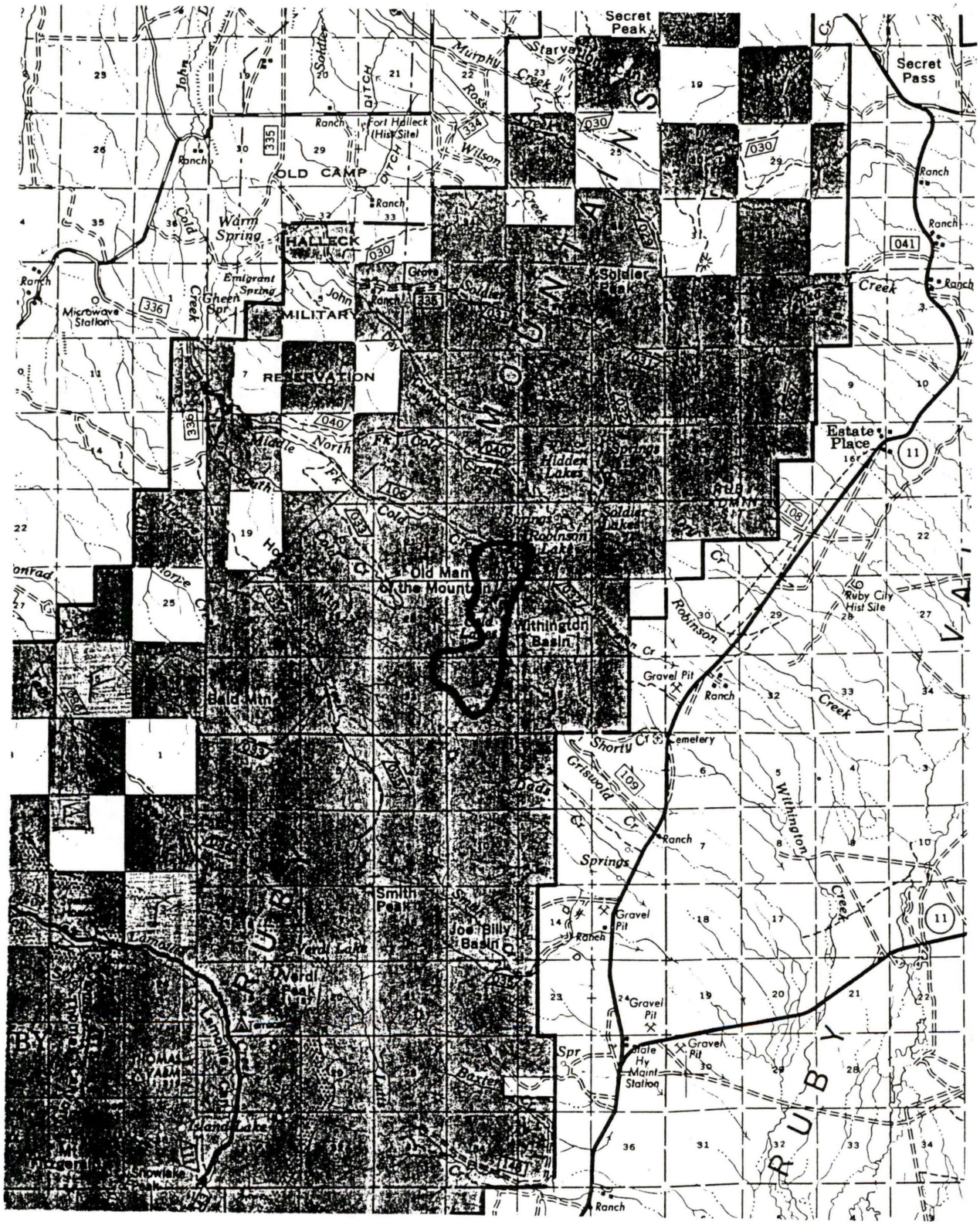
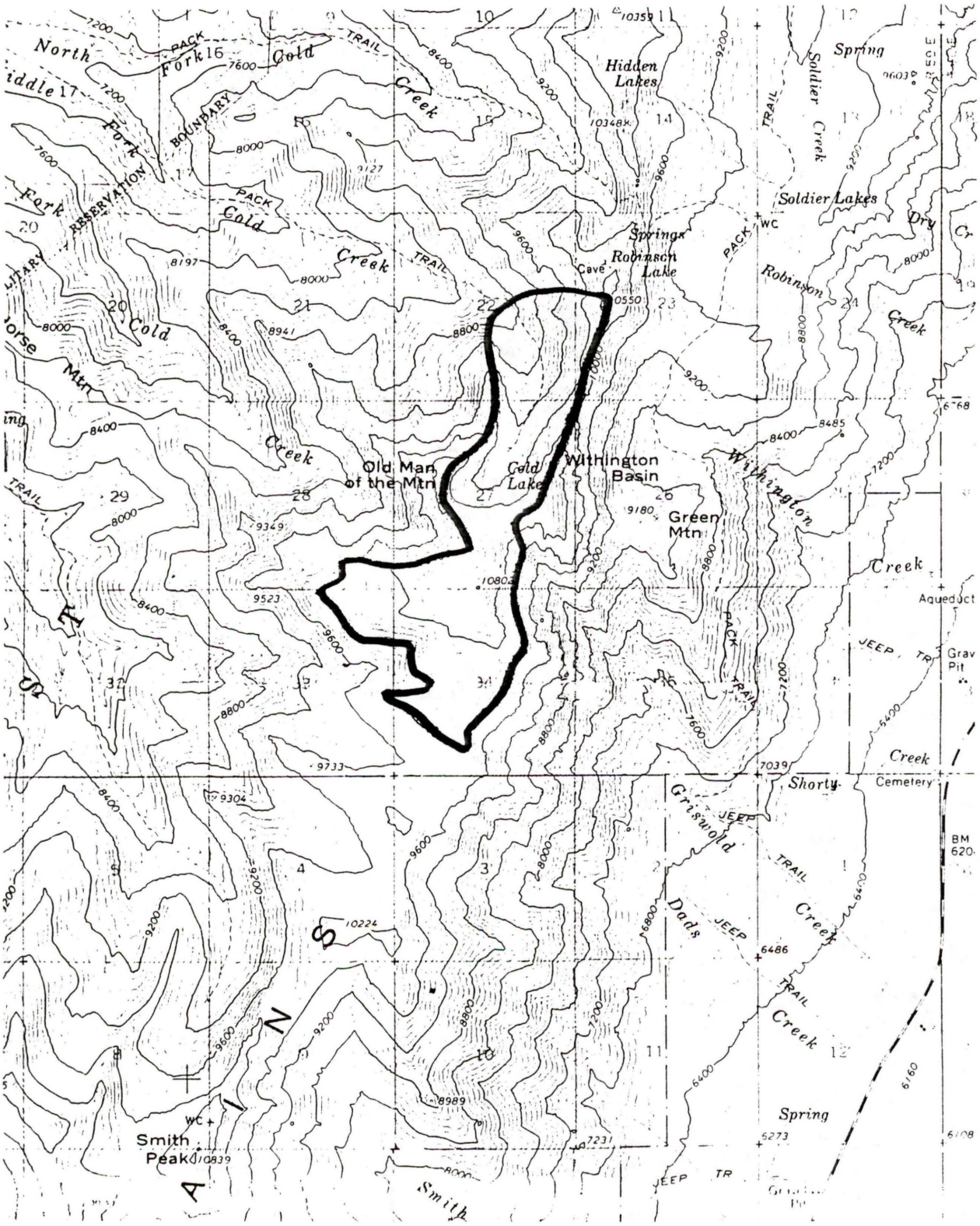


Map 1. General location of the Cold Lakes area (USDA Ruby Mountains Ranger District at 1/2 inch/mile).



Map 2. Proposed boundary of the Cold Lakes area recommended for a subalpine and alpine Research Natural Area (USGS 1:62,000 Lamoille enlarged 121 percent).

Photo 5. The alpine plateau at the headwaters of the South Fork Cold Lakes harbors a rich shrubland. *Artemisia arbuscula-Leucopoa kingii* dominates the gently sloping plateau area. The summit of Old Man of the Mountain is in the right background.

Photo 6. Close-up view of the alpine talus and scree community at about 3,290 m (10,800 ft). Scattered caespitose plants occur among the rocks. Featured here are *Eriogonum ovalifolium, Draba densifolia, Festuca brachyphylla, Erigeron* sp. and *Phlox pulvinata.*

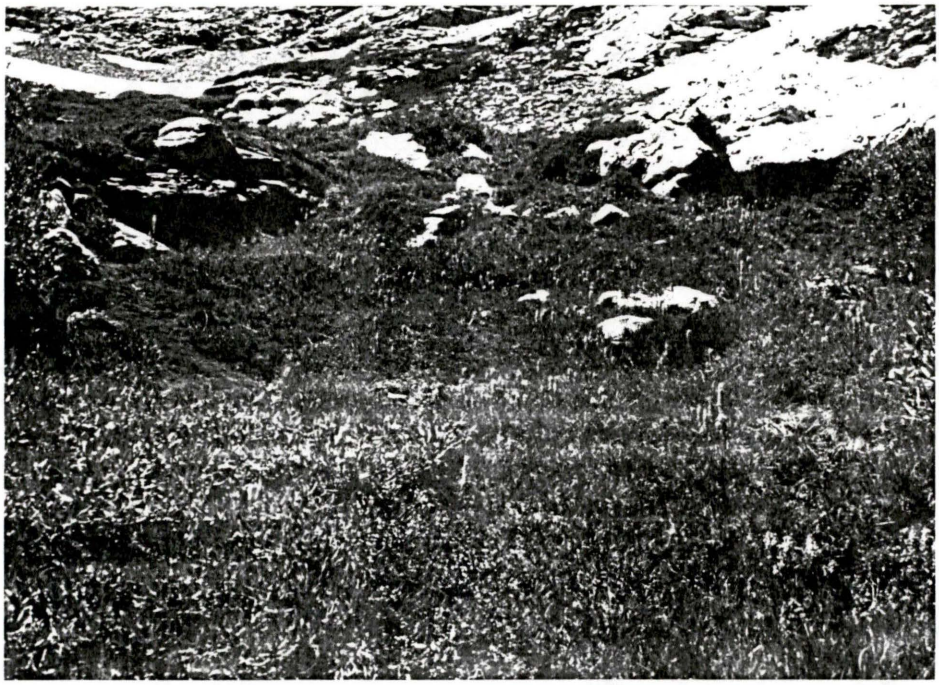


Photo 3. The wet soils along the inlet stream support a subalpine willow shrubland, *Salix glauca* (?)-*Carex* sp. The showy flower is *Pedicularis groenlandica*. This is a diverse community with several mosses present in addition to the species rich vascular flora.

Photo 4. View S from the ridgeline at 3,290 m (10,800 ft) above Cold Lakes of the Ruby Mountains crest. An alpine plateau shown in mid-ground holds a mozaic of dry steppe, shrubland, moist meadow, and talus and scree communities.

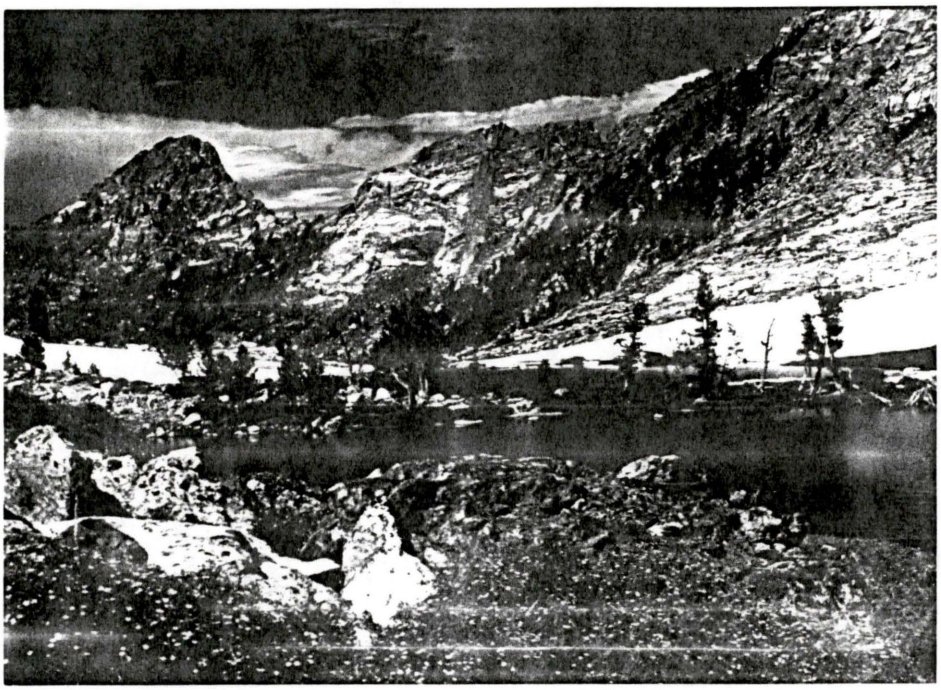


Photo 1. View N from Cold Lakes of the surrounding subalpine and alpine ecosystems. Open stands of *Pinus flexilis* comprise the forest community with scattered individuals at treelimit. In the foreground is a *Potentilla fruticosa* shrubland at 3,010 m (9,880 ft) near the inlet to Cold Lakes.

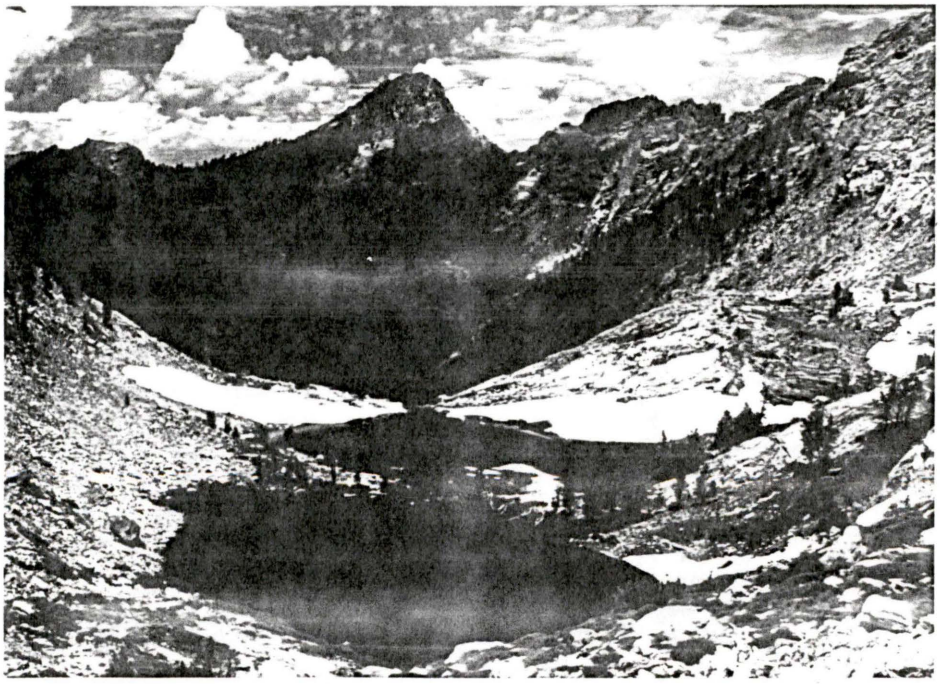


Photo 2. View N from slopes above Cold Lakes looking down into the U-shaped glaciated valley. Willow shrublands line the lake margin. The large snow fields present at lake level in mid-July suggest the derivation of lakes' name.